

Title VI Service Equity Analysis

September 2021 Service Changes

July 2021

Outline

Executive Summary.....	2
Methodology.....	2
Major Service Changes.....	2
Findings	2
Introduction	3
Title VI and Environmental Justice.....	3
Service Change Philosophy	4
RTD’s Title VI Equity Analysis Policies	4
Analysis	5
Data Sources & Methodology	5
Public Outreach Overview	6
Major Service Change, Disparate Impact, and Disproportionate Burden Analysis	6
Changes by Transit Mode.....	7
Changes by Route Service Class	7
Major Service Change Review.....	8
Major Service Changes.....	8
Major Service Change Reductions/Eliminations	8
Major Service Change Increases/Restructuring.....	8
Route-Level Analysis	8
Network Analysis	9
Summary of Findings.....	16
Appendix A: Systemwide Service Changes	18
Appendix B: Route Analysis Tables	21

Executive Summary

This document summarizes the analysis of the service changes between the June 2021 and September 2021 runboards to ensure changes have not inequitably impacted minority and low-income populations.

Methodology

RTD’s established Title VI program methodology defines the process to identify major service changes, disparate impacts, and disproportionate burdens. Analyses were performed at the route and block group levels to identify any potential disparities in service changes based on race/ethnicity or income.

Major Service Changes

RTD is proposing changes to 28 bus route/patterns and 3 rail lines of RTD’s forthcoming September 2021 runboard. Of these 31 changes, 18 services meet established thresholds for a major service change. The routes listed below have proposed modifications or reinstatements to service that were greater than 25% of baseline service. Routes in bold met a threshold for major service changes.

<p>Modified Services (25 services) <i>(Additional trips, expanded spans of service)</i></p>	<p>10, 19, 20, 42, 43, 45, 46, 48, 65, 105, 120, 121, 130, 153, 204, 206S, 225, DASH, JUMP, SKIP, BOLT, LD3</p> <p>E Line, N Line, W Line</p>
<p>Reinstated Services (6 services)</p>	<p>0L, 3L, 116X, CV, EV, P</p>

Findings

None of the proposed changes involve reductions in service; all service changes in this runboard were additions of service through modifications or reinstatements of suspended service. Service was modified with additional trips, decreased headways, or longer spans of service, and some routes were finally reinstated since their elimination during extreme service reductions in the face of last year’s challenging pandemic.

Major service change increases were entirely invested on bus services, and within bus service classes, these additional hours were distributed among Central Business District (CBD) Local (22.4%), Urban Local (34%), Suburban Local (26.5%), and Regional (16.7%) bus routes.

When considering the demographics within the service areas of routes with major service changes and as a proportion to the District overall, **both minority and low-income equity populations received a greater increase in service (were positively impacted more) compared to non-equity populations.** Minority areas had a nearly +2% benefit above non-minority areas and low-income areas received over +6% compared to higher income areas.

However, **potential disparate impacts and disproportionate burdens were identified:** of the 18 routes that had major service changes, 14 had potential disparate impact findings and 2 routes had both disparate impact and disproportionate burden findings.

Introduction

Title VI and Environmental Justice

Equity is a core principle of the Regional Transportation District's (RTD) mission to provide mass transit service in the Denver Metro Area. An equitable mass transit system fairly distributes the benefits and adverse effects of transit service without regard for race, color, national origin, or low-income status. This principle is detailed and reinforced by Title VI of the Civil Rights Act of 1964 and Executive Order 12898 pertaining to environmental justice.

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs receiving federal financial assistance. Specifically, Title VI states, "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

In 1994, President Clinton issued Executive Order 12898, which states that each federal agency "shall make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

The Federal Transit Administration's (FTA) Circular 4702.1B provides its recipients of FTA financial assistance with instructions for achieving compliance with Title VI and Environmental Justice. In this circular, the FTA requires RTD to evaluate, prior to implementation, any and all service changes that exceed the established major service change threshold, to determine whether those changes will have a disproportionately negative impact on minority or low-income populations.

This equity analysis report has been prepared to document changes that are proposed to occur between the June 2021 and September 2021 runboards. Routes with major service changes include 19 major increases with 6 of those major service changes being reinstatements of formerly suspended routes. These changes and all others have been reviewed individually at the route level and in aggregate at the block group level to identify potential impacts to the communities RTD serves.

Service Change Philosophy

An equity analysis is triggered by proposed major service changes to the transit services provided by RTD. These changes include the addition of new routes, the elimination of existing routes, and changes to the alignment and trip frequency within existing routes. RTD has established principles to identify the service changes needed to meet the diverse travel needs of the residents of the District and maintain a high-performance, sustainable transit system.

RTD Service Changes Guiding Principles

- Service performance evaluation based on the RTD Service Standards;
- The effects on the overall integrity of the transit network and on transit dependent markets;
- The availability of alternative services to affected riders;
- Cost-effective distribution throughout the District and Family of Services and the ability to enhance service when possible;
- Title VI of the Civil Rights Act: benefits and services are provided without regard to race, color or national origin; also disparate effects on low-income and minority populations; and
- Response to changes in the communities where services are provided.

RTD services are divided into various service classes depending on service type, route alignment, and frequency. Each service class has its own service standards derived from the performance of all routes within each class. RTD continually and comprehensively adjusts services in response to changes in ridership and operational performance of the transit system. It is also the District's responsibility to identify services that are underperforming and recommend modifications, curtailment, or cancellation of service as warranted. In keeping with Colorado Revised Statutes, RTD utilizes official service standards to establish performance metrics used to identify underperforming services on a class-of-service basis. The District uses these metrics to identify a series of service changes. Equity analyses examine the impact of the proposed major service changes on minority populations and low-income households at or below 150 percent of the Department of Health and Human Services Poverty Guidelines.

...The general assembly further finds that the district should be organized efficiently, economically, and on a demand-responsive basis and that the district should consider least-cost alternatives in discharging its responsibilities. The general assembly further finds that the farebox recovery ratio of the district must be improved so that resources once allocated for mass transportation can be made available for other surface transportation needs.

--Colorado Revised Statutes 32-9-119.7 Farebox Recovery Ratios -- Plans

RTD's Title VI Equity Analysis Policies

Per FTA Circular 4702.1B Chapter IV.7, RTD must establish a Major Service Change Policy, a Disparate Impact Policy, and a Disproportionate Burden Policy. Collectively, these policies provide foundational requirements for evaluating service change proposals for equity and compliance with Title VI. These policies and their applicable thresholds are listed below:

1. **Major Service Change:** A major service change is defined as a 25 percent addition or reduction in the service hours of any route that would remain in effect for twelve (12) or more months. All major service changes will be subject to an equity analysis that includes an analysis of adverse effects.
 - a. An **Adverse Effect** is defined as a geographical or temporal reduction in service that includes, but is not limited to, eliminating a route, shortening a route by eliminating segments, rerouting an existing route, and increasing headways. RTD shall consider the degree of adverse effects and analyze those effects when planning major service changes.
2. **Disparate Impact Analysis:** A major service change should not adversely affect a minority population 10 percent more than non-minority populations; this level of impact is considered a disparate impact.
3. **Disproportionate Burden Analysis:** A major service change should not adversely affect a low-income population 10 percent more than higher income populations; this level of impact is considered a disproportionate burden. A low-income population is a group of households who are at or below 150 percent of the Department of Health and Human Services Poverty Guidelines.

If a proposed major service change results in a disparate impact or a disproportionate burden, RTD will consider modifying the proposed service change. RTD will then analyze the modification and make sure it removed the potential disparate impact or disproportionate burden. If a less discriminatory option cannot be identified and RTD can demonstrate a substantial legitimate justification for the proposed service change, the FTA may allow RTD to proceed with the proposed change.

Analysis

Data Sources & Methodology

Demographic data used for this analysis comes from the Census Bureau's American Community Survey (ACS) 5-Year Estimates for years 2014 to 2018 and is reviewed at the census block group geographic level. Other data related to the analysis includes route alignments and block group geography. The linking of these datasets into a service-geographic-demographic combination relates equity populations with changes in service at a geographic level to aid in reviewing potential impacts to District equity communities.

The equity analysis for the September 2021 runboard looked at whether an individual route's major service changes impacted the communities it served. The review needed to determine the proportional difference in changes made to equity populations within a route's quarter-mile service area. These proportional differences were compared against District population proportions of equity populations and route proportions of equity populations.

Low-income status for population within the District is derived from the Census Bureau and is based on 150% of the United States federal poverty level (Department of Health and Human Services guidelines), based on local context, which is an annual income of \$32,580 for a family of 3. Minority status was based on the non-white and Hispanic or Latino count of total population. The service area was based on the collection of block groups within the District boundaries.

Route service area population was determined using a quarter mile “catchment area” centered around bus stops and rail stations. This catchment area was then used to calculate the percentage overlap of census block-based population underneath. For instance, if a catchment area contained 100% of the underlying block group, 100% of the population would be associated with the services within a quarter mile; if 50% of a block group was contained in the catchment area, only half of the underlying population would count as being included (ratios of population demographics would be unchanged).

RTD calculated the net change in service hours for each route modification to provide the percent difference from baseline service hours. Any change at or above 25% from baseline was flagged as a major service change for further review.

Public Outreach Overview

September 2021 Service Changes

Three public meetings were conducted between June 28th and July 7th, 2021. The service change comments, and the details of these meetings are summarized in the AGENDA PACKET. Table 1 captures the meeting locations and dates, the number of attendees and the common themes obtained from the comments.

Table 1. Public meeting details

Date & Time Location	Comment Themes	Number of Attendees
June 28th at 5:30pm Virtual Public Meeting	Adding back and reinstating service	30
July 1st at 5:30pm Virtual Public Meeting	Support for the reinstatement of 116X, Reinstatement of the GS Line, bringing back the J bus route for CU Students and Staff, Consideration to bring back the FF4, Reinstatement of Routes 46 and 35, Late night and OWL service for next service proposals (e.g., 0 and 15 routes)	45
July 7th at noon Virtual Public Meeting	Adding back and reinstating service	63
		Total – 138

The public was also notified of the ability to submit comments to service.changes@rtd-denver.com, by phone at 303-299-2004, and by fax 303-299-2227. The main comments were related to adding back service.

Major Service Change, Disparate Impact, and Disproportionate Burden Analysis

Proposed service changes for the September 2021 runboard that resulted in a 25% or greater change in service were categorized by equity grouping (minority or non-minority, low-income or higher income) for comparison. Routes were categorized as either equity or non-equity based on their identification within the prior network using 2018 ACS 5-year demographic data.

A comparative, proportional equity analysis was completed to review the routes individually. This analysis identified the equity and non-equity populations within a route service area and compared those against the equity and non-equity populations of the District. If impacted equity populations within the route service area received 10% or greater impacts compared to non-equity populations, the route had a potential finding of disparate impact (for minority populations) or disproportionate burden (for low-income populations) and was flagged for a finding of potential impact.

MAJOR SERVICE CHANGE TEST

Identify routes with proposed major service changes (annual trips) of 25% or more

Changes by Transit Mode

Additional hours of service were primarily driven into rebuilding bus services that had previously been curtailed or suspended. **Bus service was increased by nearly 454 daily revenue service hours.** The E, W, and N rail lines had modest increases in service (additional trips on E Line, additional trip on W Line, and schedule modifications N Lines). **Additional daily revenue service hours are proposed for modified or reinstated services, with 380 of those hours at or above major service change thresholds.**

Table 2. Summary of service changes by transit mode

Mode	Additional Daily Hours
All Rail	1.8
All Bus	453.8
Overall	455.6

Changes by Route Service Class

All service changes were reviewed by service class, categories generally describing the geographic location or service area (and unique performance thresholds) of each route. Service changes included all changes to daily hours in addition to only hours associated with major service changes. Service classes include 4 categories for bus services: Central Business District (CBD) Local, Urban Local, Suburban Local, and Regional, a rail category, and 3 special services (MallRide, MetroRide, and the Englewood Trolley). **Generally, additional hours of revenue service were evenly distributed among CBD, Urban, and Suburban Locals and Regional services, with slightly more allocated to Urban and Suburban Local services.**

Table 3. Major Service Changes by Route Service Class

Service Class	Line Count	Change in Daily Hours	Pct of Total	Major Svc Change Hours	Pct of Total
CBD Local	7	102.0	22.4%	87	22.9%
Urban Local	8	155.0	34.0%	108	28.4%
Suburban Local	8	120.8	26.5%	109	28.7%
Regional	6	76.0	16.7%	76	20.0%
Rail	3	1.8	0.4%	0	0%
MallRide	0	n/a	n/a	n/a	n/a
MetroRide	0	n/a	n/a	n/a	n/a
Trolley	0	n/a	n/a	n/a	n/a
Total	32	455.6	100%	380.0	100%

Major Service Change Review

A complete listing of all service changes can be found in Appendix A. Changes were first reviewed in aggregate equity groupings of routes prior to individual review of routes, route block groups, and overall network levels; equity grouping comparison occurred at every level. Major service changes are categorized as the following:

- **Major Service Reductions or Eliminations** (a service reduction of 25% or more)
- **Major Service Increases/Restructuring** (service increases of 25% or more related to new or restructured service)

Major Service Changes

Eighteen bus routes had major service changes and included 12 bus routes with service increases of 25% or greater and 6 reintroduced bus routes.

Major Service Change Reductions/Eliminations

There were no major service reductions.

Major Service Change Increases/Restructuring

Eighteen routes were found to have major service change increases. These included 6 reinstatements (0L, 3L, 116X, CV, EV, and P) and 12 modifications to spans of service or additional trips (10, 19, 42, 48, 120W, 204, 206S, 225, JUMP, SKIP, BOLT, and LD3). Other routes had modifications that did not meet the threshold for major service changes (20, 43, 45, 46, 65, 105, 121, 130, 153, DASH, E Line, W Line, and N Line)

Route-Level Analysis

Having identified the service changes which meet the definition of Major Service Change, the next step in the analysis is to look at each route individually to determine potential Disparate Impacts (minority populations) and/or Disproportionate Burdens (low-income populations). Both service reductions and service increases are analyzed (for this analysis there were no reductions). For service increases, the

analysis examines the extent to which the benefits of the improvements are inclusive of minority and low-income populations. For service decreases, the analysis examines the extent to which the adverse effects of the reductions are disproportionately borne by minority and low-income populations.

DISPARATE IMPACT AND DISPROPORTIONATE BURDEN ANALYSIS

For each route with a major service change, determine the percent of the route's impacted equity and non-equity populations comprising the District's equity and non-equity populations; if the difference is greater than 10% for equity populations, additional review is required for potential adverse impacts

In concert with RTD's Title VI policies, the demographics of each of major service change routes were reviewed for potential disparate impact (DI) or disproportionate burden (DB) findings. In summary, the review of these adverse impacts determined the following:

- **14 routes met the threshold for a potential disparate impact**
- **2 routes met the threshold for a potential disproportionate burden**
- **2 routes met thresholds for both impacts**

A complete listing of all potential DI and DB findings can be found in Appendix B.

Network Analysis

A network analysis is not typical in RTD's equity analyses but was used to understand the large number of service changes occurring across the network. A network level analysis has potential to provide further understanding of changes to service levels for Title VI protected populations at aggregate levels.

While RTD has not established a formal policy for a network level analysis, the major service change threshold of 25% or greater used for individual route-level analyses was used as precedent to determine potential adverse impacts overall and to identify structural issues in areas requiring further review. Once average District thresholds for low-income and minority populations were established, subsequent equity analyses focused on the subset of District block groups that experienced major service changes of 25% or greater (additions or reductions in service), and whether equity block groups with major service changes experienced service changes of 10% or more compared to non-equity block groups. Routes with major service changes are later comparatively reviewed for potential adverse effects at route-block group levels (block groups within route service areas).

The analysis of all service changes identified the following:

- Systemwide, service was increased by over 450 daily revenue hours.
- Of the over 350,000 people available to be served by stops within the service area of routes with major service changes, minority and low-income groups represented a higher share of population than District averages, indicating targeted services to equity groups.

- At the route level, equity routes and non-equity routes¹ were compared only for those with major service changes. Of the 18 routes with major service changes, all but 1 route (P) serve above-average minority or low-income populations.

In aggregate, a review of all routes found no adverse impacts between equity and non-equity routes.

An analysis of all District block groups and their service levels was conducted to establish the baseline equity thresholds for low-income and minority populations and to determine the systemwide magnitude of impacts of the June 2021 to September 2021 service change. Block groups with low-income and minority populations at or above the District average are referred to in this analysis as “equity” block groups whereas higher income and non-minority block groups are referred to as “non-equity” block groups.

NETWORK ANALYSIS PROCESS

Determine block groups at/above District averages for low-income population (16.8%) and minority population (35.4%)

Determine which block groups experienced service changes of 25% or more

Of block groups with a major service change, compare the difference in annual trips for equity versus non-equity block groups; if the difference is more than 10%, review for potential adverse impacts

There are 1,916 block groups defined as being wholly within or mostly within the District². Using the 2018 5-Year ACS Estimates, total population residing within these block groups was calculated as well as the total minority population and total low-income population, calculated separately, to determine the District-wide low-income and minority rates which set the thresholds for which block groups are classified as above average. While the percent minority figure of 35.4% was derived by using the base population of the service area (3.019 million) the low-income population percentage of 16.8% is derived from a slightly smaller population figure. This is due to the smaller population whose poverty status the Census Bureau can determine³. The thresholds summarized in Table 4 yielded 751 (39% of all) block groups above the District average for low-income population, and 715 (37%) block groups above the District average for minority population.

Table 4. District averages; NTD 2018; ACS 2014-2018 5-Year estimates

Service Area (sq. mi.)	Total Block Groups	Total Population	Percent Minority	Total Population (assessed)	Percent Low-Income
2,342	1,916	3,019,217	35.4%	2,974,027	16.8%

¹ Based on existence of the route within the June 2021 network and the population within a quarter mile of bus stops or rail stations. 2018 5-Year estimates were used for population identification.

² Some block groups are not completely contained within the District boundaries due to differences in boundaries between the District and Census-defined geographies.

³ The total population whose poverty status is determinable/assessed is lower than the estimate of total population and results in a different base population used to determine low-income percent of population.

Proposed major service changes were examined in aggregate to determine overall impacts to underlying population. Table 5 summarizes the change in service for block group population within one quarter mile of stops with proposed major service changes proportionally compared to population in the District. This comparison reviews the equity composition of those who may be impacted by proposed service changes compared to the overall equity composition of the District overall.

Equity groups stand to benefit more than non-equity groups, with minority population benefitting almost 2% more than non-minority population and low-income population receiving 6% more than higher income population.

Table 5. Systemwide disparate impact and disproportionate burden equity analysis summary

Systemwide Disparate Impact & Disproportionate Impact Analysis				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	219,856	127,206	268,279	78,783
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	88.7%	88.1%	89.2%	84.2%
% District Impacted	11.28%	11.90%	10.84%	15.81%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	10.15%	11.90%	9.75%	15.81%

Figures 2 and 3 illustrate the locations of above average low-income and minority block groups within the District, as well as highlight routes with major service changes (orange). Low-income populations and minority populations appear to overlap in similar areas outside of central Denver, including most of Aurora, Commerce City, and Brighton, and areas east of Boulder, and areas southeast of Longmont. Low-income populations appear to have greater spread, with additional areas in the mountain communities and areas west of Downtown Denver.

Proposed major service changes indicated in these figures show the reinstatement of regional express services in outer areas previously impacted by pandemic service cuts, such as CV, EV, and P. Reinstatement of these services expands regional access across the District service area. Several routes also cover large expanses of equity areas, such as Routes 3L, 19, and 42.

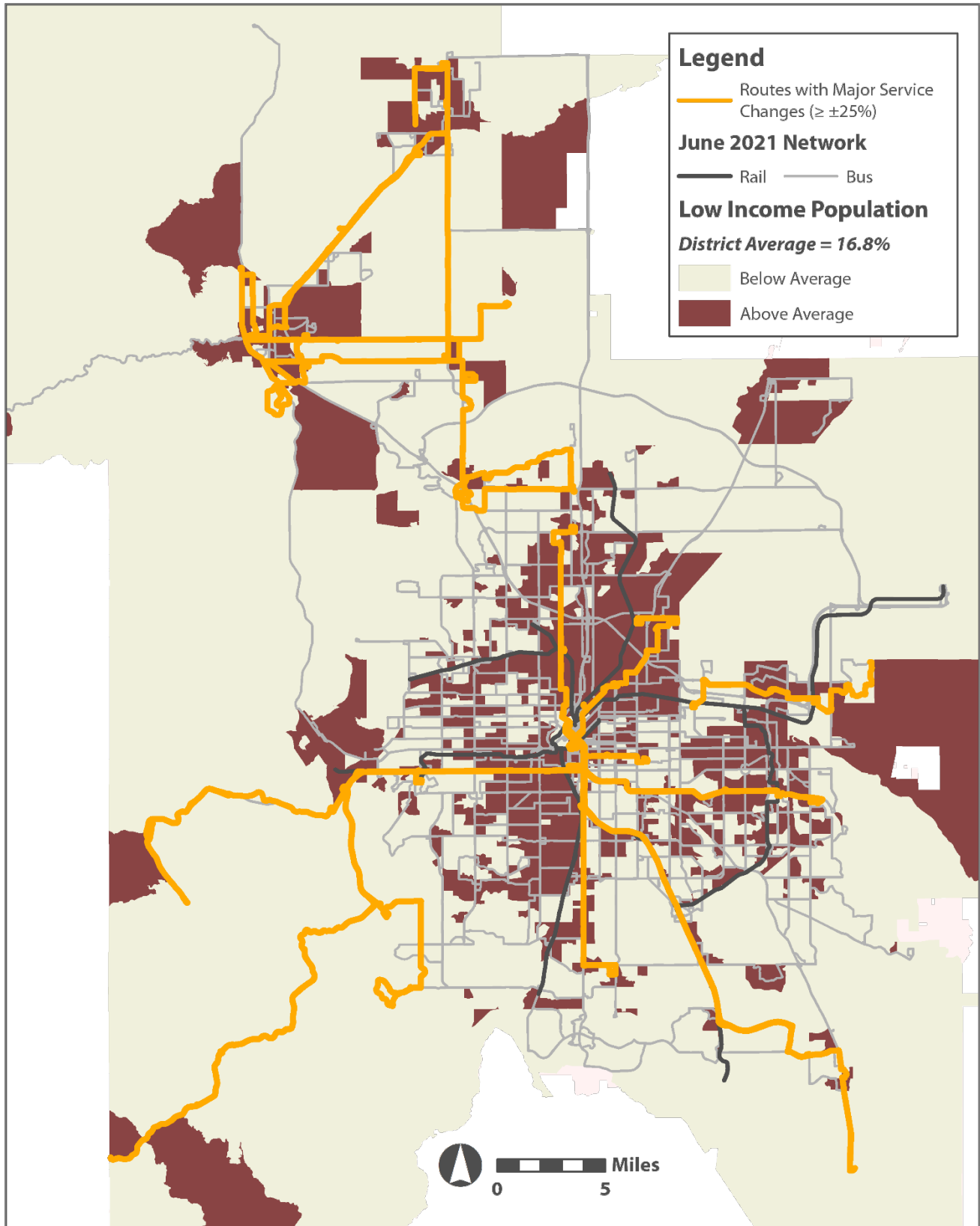


Figure 1. District block groups with above-average low-income population (red); US Census Bureau 2014-2018 5-Year Estimates.

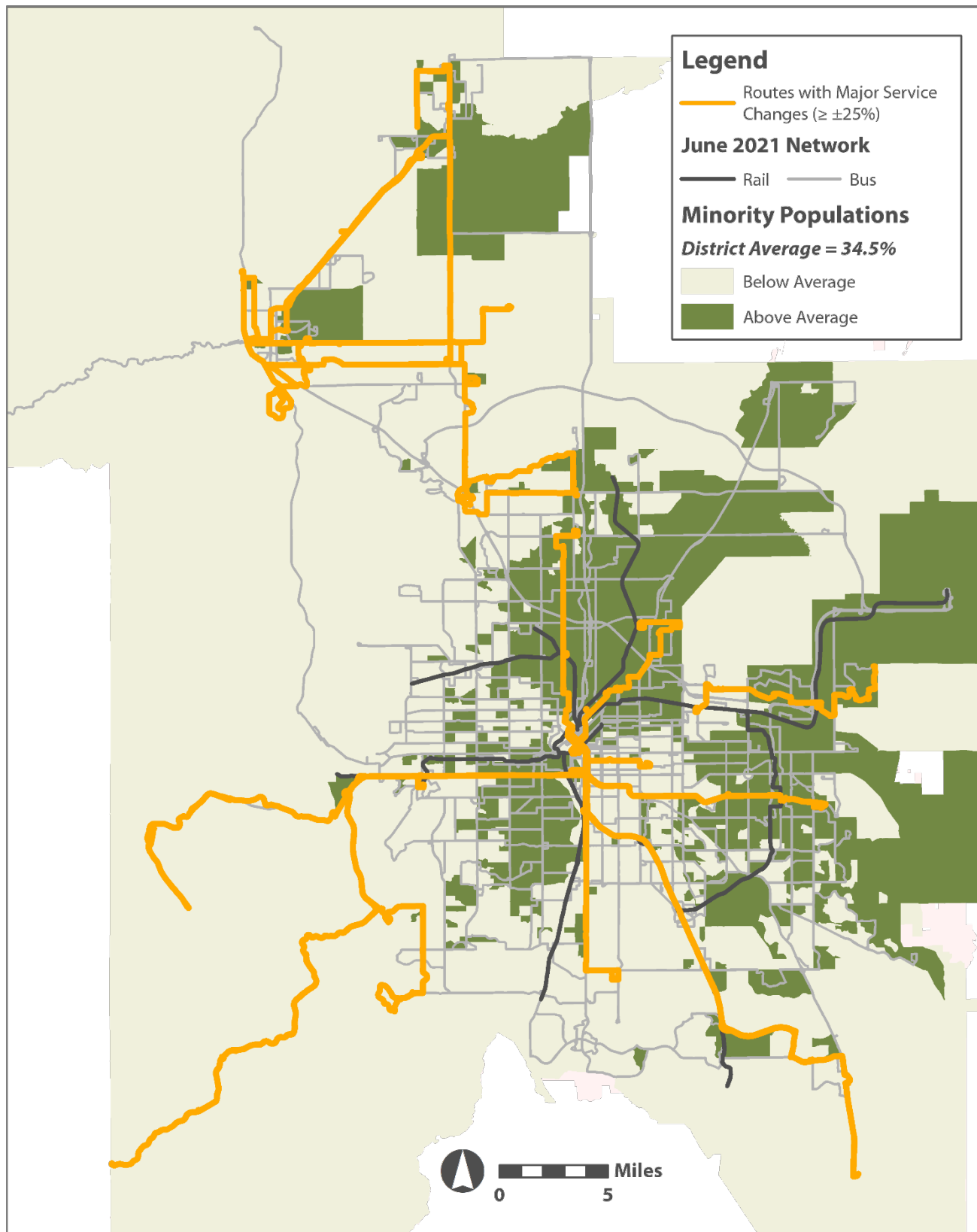


Figure 2. District block groups with above-average minority population (green); US Census Bureau 2014-2018 5-Year Estimates.

The June 2021 to September 2021 service changes are symbolized in Figure 3. Depiction of route and segment changes by severity of change, June 2021 to September 2021. This map provides a generalized view of where service is changing at the route pattern level. The June 2021 bus network is colorized according to the percentage change in the annual trips. Rail service (E, W, and N lines) had minimal changes and is excluded from shading. The September 2021 network includes several routes being modified (light green or teal) or reinstated or having large increases in service (dark blue).

Many reinstated routes are occurring in the periphery of the network and are regional in focus. These were some of the first and largest cuts to the bus network last year. This includes some of the mountain services from Evergreen and Conifer to Denver, for example as well as LD3 from Longmont and Route P from Parker. Some limited services were also reinstated such as 0L, 3L, and 116X among others. Most of the urban core routes, particularly those in the East Sector serving significant levels of equity populations, saw some increases in service, represented in green.

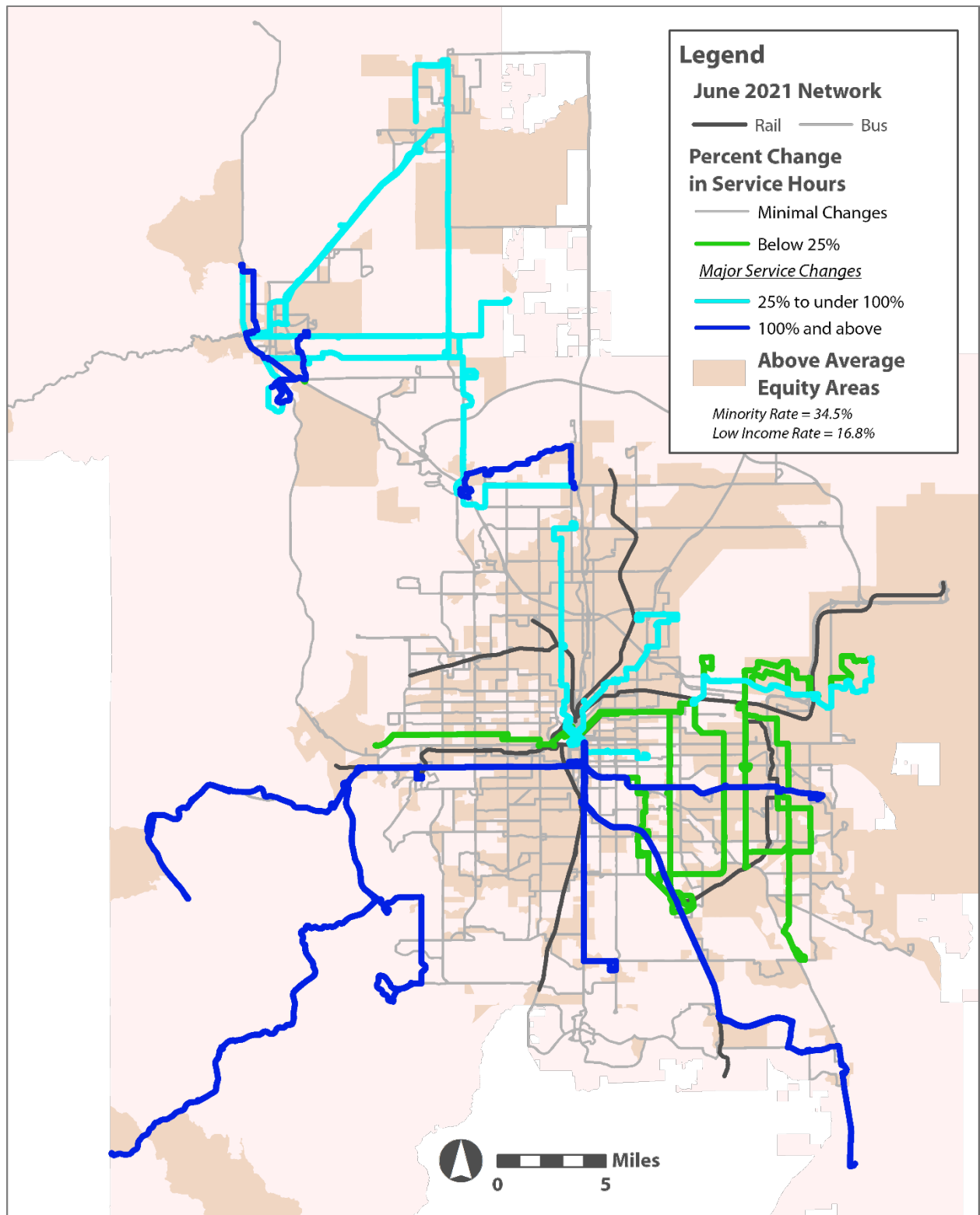


Figure 3. Depiction of route and segment changes by severity of change, June 2021 to September 2021

Summary of Findings

The network changes that are proposed between June 2021 and September 2021 include modifications to service that include additional trips and longer spans of service as well as reinstatements of routes previously suspended during the pandemic. These include limited stop overlays supplemental corridor local service as well as regional express routes from suburban and mountainous areas of the District. **major service change increases were entirely invested on bus services**, and within bus service classes, these additional hours were distributed among CBD Local (22.4%), Urban Local (34%), Suburban Local (26.5%), and Regional (16.7%) bus routes. **None of the proposed changes involve reductions in service; all service changes in this runboard were additions of service through modifications or reinstatements of suspended service.**

Route-level Findings:

- Of the 31 total proposed service changes, **14 had potential disparate impact findings** and **2 had both disparate impact and potential disproportionate burden findings.**

Table 6 summarizes major service changes by change type, provides findings of potential disparate impacts and disproportionate burdens based on a comparative difference analysis, and provides the individual route service change.

Table 6. Summary of major service changes by change type and impact

Change Type	Number	Route	Potential Disparate Impact?	Potential Disproportionate Burden?	Service Change Pct
Modifications	10	10 East 12th Avenue	YES	NO	41%
	19	19 North Pecos	NO	NO	84%
	42	42 Montbello via Albrook / GVR	NO	NO	27%
	48	48 East 48th Avenue / Commerce City	NO	NO	29%
	120	120 120th Avenue / Brighton	YES	YES	79%
	204	204 Table Mesa / Moorhead / North 19th	YES	NO	193%
	206S	206S Boulder Junction/ Fairview H. S.	YES	NO	154%
	225	225 Boulder / Lafayette via Baseline	YES	NO	67%
	JUMP	JUMP Boulder / Lafayette via Arapahoe	YES	NO	70%
	SKIP	SKIP Broadway	YES	NO	81%
	BOLT	BOLT Boulder / Longmont	YES	NO	44%
	LD3	LD3 Longmont / Denver	YES	NO	53%
	Reinstatements	0L	0L South Broadway Limited	YES	NO
3L		3L East Alameda Limited	NO	NO	n/a
116X		116X South Simms Express	YES	YES	n/a
CV		CV Pine Junction / Conifer / Denver	YES	NO	n/a
EV		EV Evergreen / Denver	YES	NO	n/a
P		P Parker / Denver	YES	NO	n/a

Next Steps for Potential Disparate Impacts and Disproportionate Burden Findings

Given a potential disparate impact or disproportionate burden, RTD will evaluate whether there is an alternative that would serve the same objectives and with a more equitable impact. Otherwise, RTD will either:

- a) Alter the service proposal to avoid, minimize, or mitigate potential disparate impacts/disproportionate burdens, or;
- b) Provide a substantial legitimate justification for keeping the proposal as-is and show that there are no alternatives that would have a less disparate impact on minority riders or disproportionate burden on low-income customers but would still accomplish the project or program goals.

Alterations to the initial proposed September 2021 service changes⁴ include adding improvements to the routes 42, 45, 49, and 121 (all serving high concentrations of minority populations) signifies RTD's response to ensure an equitable distribution of service improvements and to minimize impacts.

In addition to the systemwide-level findings below, RTD's on-going pandemic response, the substantial ridership decline, personnel impacts, resource allocation (human and capital), and recovery uncertainty serves as justification for maintaining the September service changes proposal.

Systemwide-level Findings:

- Of the over 350,000 people available to be served by stops within the service area of routes with major service changes, minority and low-income groups represented a higher share of population than District averages, indicating targeted services to equity groups.
- Of the 18 routes with major service changes, all but 1 route (P) serve above-average minority or low-income populations.
- When considering the demographics within the service areas of routes with major service changes and as a proportion to the District overall, both **minority and low-income populations received a greater increase in service (were positively impacted more) compared to non-equity populations**. Minority areas had a nearly +2% benefit above non-minority areas and low-income areas received over +6% compared to higher income areas.

Therefore, no system-level disparate impact or disproportionate burden is found related to the proposed major service increases in the September service change proposal.

⁴ <https://www.rtd-denver.com/service-changes/september-2021>

Appendix A: Systemwide Service Changes

September 2021 Service Changes

Table A-1

Change Type	Service Changes	
	Route	Description
Modified	10	Increase weekday rush hour service frequency to every 15 minutes between 6:30 a.m. – 9 a.m., and 3:30 p.m. – 6 p.m., between 9th/Clermont and downtown Denver.
	19	Increase weekday service frequency to every 30 minutes. Running time adjustments are also proposed to Increase on-time performance.
	20	Restore three hourly, weekday trips in the A.M. and P.M. rush hours between Union Station and the National Renewable Energy Laboratory.
	42	Restore selected early morning/late evening trips. Restore Route 42 weekday peak period 15 minute frequency in Montbello. Anticipated cost impact is estimated to be 20 weekday hours
	43	Restore select early morning and late-night trips.
	45	Restore selected early morning/late evening trips. Restore Route 42 weekday peak period 15 minute frequency in Montbello. Anticipated cost impact is estimated to be 10 weekday hours
	46	Begin weekday service 90 minutes earlier than existing schedule, with service beginning at approximately 6:15 a.m. in each direction
	48	Expand weekday service hours to 5 a.m. – 11 p.m., with 30-minute service frequency all day.
	65	Restore weekday service, with the route extending south from Southmoor Station to Ulster/Tufts in the Denver Tech Center, and north to 56th/Central Park serving Northfield High School.
	105	Restore select early morning and late-night trips.
	120	Implement the original, RTD Board-approved 120W route on weekdays with A.M. and P.M. rush hour service, with 60-minute service frequency.
	121	Restore 15 minute peak frequency north of Peoria Station through the Montbello neighborhood. Reinstate selected early morning and late-night trips. Anticipated cost impacts are estimated to be 20 weekday hours
	130	Restore the 4:46 a.m. southbound trip.
	153	Restore select early morning and late-night trips.
	204	Implement the previous, RTD Board-approved weekday schedule with 15-minute service frequency for A.M. and P.M. rush hours, and 30-minute frequency for midday. Proposed routing will operate between Table Mesa/Broadway and Front Range/Broadway. No changes are proposed for Saturday or Sunday schedules.
	206S	Implement 30-minute service frequency on weekdays during A.M. and P.M. rush hours between Arapahoe/55th and Fairview High School, allowing the provision of service to schools in Boulder.
225	Restore the previous weekday schedule, with 15-minute service frequency for A.M. and P.M. rush hours, and 30-minute frequency midday.	

Change Type	Service Changes	
	Route	Description
	DASH	Add short-turn trips during weekday A.M. and P.M. rush hours, with service between Downtown Boulder Station and Manhattan Circle.
	JUMP	implement the previous, RTD Board-approved weekday schedule. Operate between Downtown Boulder Station and BVSD Tech. Education Center with 15 minute service frequency on weekdays during A.M. and P.M. rush hours, and 30-minute frequency midday. Operate between Downtown Boulder Station and Lafayette Park-n-Ride at 30 minute service frequency during A.M. and P.M. rush hours, and 60-minute frequency midday. Operate between Downtown Boulder Station and Erie Recreation Center with 30-minute service frequency during A.M. and P.M. rush hours., with no midday service.
	SKIP	Restore the previous weekday schedule, with 10-minute service frequency for A.M. and P.M. rush hours, and 15-minute frequency midday.
	BOLT	Increase weekday service frequency to 30 minutes in the A.M. and P.M. rush hours, and 60 minutes for midday.
	LD3	Restore weekday service on LD3, with 60-minute service frequency during midday between 8th/Coffman Park-n-Ride and US•36 Broomfield Park-n-Ride.
	E Line	Reinstate Friday and Saturday evening service, expanding the service span to 2 a.m. Cost is an additional 12 hours Friday, and additional 12 hours for Saturday.
	W Line	Reinstate Friday and Saturday evening service, expanding the service span to 2 a.m. Cost is an additional 10 hours Friday, and additional 10 hours for Saturday.
	N Line	Minor running time adjustments are proposed to improve on-time performance.
	Reinstated	0L
	3L	Reinstate rush hour service in the weekday mornings and afternoons, with three (3) daily trips in each direction. Proposed route will operate between Aurora Metro Center Station and Civic Center Station only.
	116X	Reinstate weekday service with three A.M. and P.M. rush hour trips. These trips will temporarily serve passengers boarding and aligning at Federal Center Station in lieu of the route 99L returning from suspension at this time.
	CV	Reinstate weekday service with three A.M. and P.M. rush hour trips. These trips will temporarily serve passengers boarding and aligning at Federal Center Station in lieu of the route 99L returning from suspension at this time.

Change Type	Service Changes	
	Route	Description
	EV	Reinstate weekday service with three A.M. and P.M. rush hour trips. These trips will temporarily serve passengers boarding and alighting at Federal Center Station in lieu of the route 99L returning from suspension at this time.
	P	Reinstate weekday service, with three trips in each direction.

Appendix B: Route Analysis Tables

Major Service Changes

BUS

Route 0L – South Broadway Limited

Reinstate weekday rush hour service between I-25 Broadway and Civic Center Station, with 15-minute service frequency between 6 a.m. – 9 a.m. and 3:30 p.m. – 6 p.m.

Route 0L South Broadway Limited				
<i>Reinstated Service</i>				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	27,557	9,035	29,092	7,499
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	98.6%	99.2%	98.8%	98.5%
% District Impacted	1.41%	0.84%	1.18%	1.50%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	1.27%	0.84%	1.06%	1.50%

Route 3L – East Alameda Limited

Reinstate rush hour service in the weekday mornings and afternoons, with three (3) daily trips in each direction. Proposed route will operate between Aurora Metro Center Station and Civic Center Station only.

Route 3L East Alameda Limited				
<i>Reinstated Service</i>				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	25,506	20,797	35,831	10,472
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	98.7%	98.1%	98.6%	97.9%
% District Impacted	1.31%	1.94%	1.45%	2.10%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	1.18%	1.94%	1.30%	2.10%

Route 10 – East 12th Avenue

Increase weekday rush hour service frequency to every 15 minutes between 6:30 a.m. – 9 a.m., and 3:30 p.m. – 6 p.m., between 9th/Clermont and downtown Denver.

Route 10 East 12th Avenue				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	31,772	8,178	31,756	8,194
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	98.4%	99.2%	98.7%	98.4%
% District Impacted	1.63%	0.76%	1.28%	1.64%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	1.47%	0.76%	1.15%	1.64%

19 – North Pecos

Increase weekday service frequency to every 30 minutes. Running time adjustments are also proposed to increase on-time performance.

Route 19 North Pecos				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	21,474	21,494	31,188	11,779
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	98.9%	98.0%	98.7%	97.6%
% District Impacted	1.10%	2.01%	1.26%	2.36%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	0.99%	2.01%	1.13%	2.36%

Route 42 – Montbello via Albrook / GVR

Restore selected early morning/late evening trips. Restore Route 42 weekday peak period 15 minute frequency in Montbello. Anticipated cost impact is estimated to be 20 weekday hours

Route 42 Montbello via Albrook / GVR				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	7,019	23,683	23,735	6,968
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	99.6%	97.8%	99.0%	98.6%
% District Impacted	0.36%	2.21%	0.96%	1.40%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	0.32%	2.21%	0.86%	1.40%

48 – East 48th Avenue/ Commerce City

Expand weekday service hours to 5 a.m. – 11 p.m., with 30-minute service frequency all day.

Route 48 East 48th Avenue / Commerce City				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	12,541	15,527	19,982	8,086
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
<i>% District Not Impacted</i>	99.4%	98.5%	99.2%	98.4%
<i>% District Impacted</i>	0.64%	1.45%	0.81%	1.62%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	0.58%	1.45%	0.73%	1.62%

Route 204 – Table Mesa/Moorhead/North 19th

Implement the previous, RTD Board-approved weekday schedule with 15-minute service frequency for A.M. and P.M. rush hours, and 30-minute frequency for midday. Proposed routing will operate between Table Mesa/Broadway and Front Range/Broadway. No changes are proposed for Saturday or Sunday schedules.

Route 204 Table Mesa / Moorhead / North 19th				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	25,488	6,687	22,099	10,075
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
<i>% District Not Impacted</i>	98.7%	99.4%	99.1%	98.0%
<i>% District Impacted</i>	1.31%	0.63%	0.89%	2.02%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	1.18%	0.63%	0.80%	2.02%

Route 206S – Pearl/Manhattan/Fairview High (Arapahoe & 55th / Fairview H.S.)

Implement 30-minute service frequency on weekdays during A.M. and P.M. rush hours between Arapahoe/55th and Fairview High School, allowing the provision of service to schools in Boulder.

Route 206S Arapahoe & 55th / Fairview H. S.				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	10,001	2,388	10,428	1,961
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	99.5%	99.8%	99.6%	99.6%
% District Impacted	0.51%	0.22%	0.42%	0.39%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	0.46%	0.22%	0.38%	0.39%

225 – Boulder/ Lafayette via Baseline

Restore the previous weekday schedule, with 15-minute service frequency for A.M. and P.M. rush hours, and 30-minute frequency midday.

Route 225 Boulder / Lafayette via Baseline				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	20,925	5,540	18,266	8,199
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	98.9%	99.5%	99.3%	98.4%
% District Impacted	1.07%	0.52%	0.74%	1.64%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	0.97%	0.52%	0.66%	1.64%

JUMP – Boulder/Lafayette via Arapahoe

Implement the previous, RTD Board-approved weekday schedule. Operate between Downtown Boulder Station and BVSD Tech. Education Center with 15 minute service frequency on weekdays during A.M. and P.M. rush hours, and 30-minute frequency midday. Operate between Downtown Boulder Station and Lafayette Park-n-Ride at 30 minute service frequency during A.M. and P.M. rush hours, and 60 minute frequency midday. Operate between Downtown Boulder Station and Erie Recreation Center with 30-minute service frequency during A.M. and P.M. rush hours., with no midday service.

Route JUMP Boulder / Lafayette via Arapahoe				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	14,343	5,519	13,864	5,998
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	99.3%	99.5%	99.4%	98.8%
% District Impacted	0.74%	0.52%	0.56%	1.20%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	0.66%	0.52%	0.50%	1.20%

SKIP – Broadway (Boulder)

Restore the previous weekday schedule, with 10-minute service frequency for A.M. and P.M. rush hours, and 15-minute frequency midday.

Route SKIP Broadway				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	22,488	4,572	19,956	7,104
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	98.8%	99.6%	99.2%	98.6%
% District Impacted	1.15%	0.43%	0.81%	1.43%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	1.04%	0.43%	0.73%	1.43%

Route 116X

Reinstate weekday service with three A.M. and P.M. rush hour trips. These trips will temporarily serve passengers boarding and alighting at Federal Center Station in lieu of the route 99L returning from suspension at this time.

Route 116X South Simms Express				
Reinstated Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	16,171	4,029	17,356	2,845
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	99.2%	99.6%	99.3%	99.4%
% District Impacted	0.83%	0.38%	0.70%	0.57%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	0.75%	0.38%	0.63%	0.57%

Route 120W - 120th Avenue / Brighton

It is proposed to implement the original, RTD Board-approved 120W route on weekdays with A.M. and P.M. rush hour service, with 60-minute service frequency.

Route 120W 120th Avenue / Wagon Wheel P&R				
<i>Modified Service</i>				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	6,379	2,430	7,468	1,340
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
<i>% District Not Impacted</i>	99.7%	99.8%	99.7%	99.7%
<i>% District Impacted</i>	0.33%	0.23%	0.30%	0.27%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	0.29%	0.23%	0.27%	0.27%

BOLT – Boulder/ Longmont

Increase weekday service frequency to 30 minutes in the A.M. and P.M. rush hours, and 60 minutes for midday.

Route BOLT Boulder / Longmont				
<i>Modified Service</i>				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	22,549	9,051	23,168	8,432
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
<i>% District Not Impacted</i>	98.8%	99.2%	99.1%	98.3%
<i>% District Impacted</i>	1.16%	0.85%	0.94%	1.69%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	1.04%	0.85%	0.84%	1.69%

Route CV – Pine Junction/Conifer/Denver

Reinstate weekday service with three A.M. and P.M. rush hour trips. These trips will temporarily serve passengers boarding and aligning at Federal Center Station in lieu of the route 99L returning from suspension at this time.

Route CV Pine Junction / Conifer / Denver				
Reinstated Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	6,714	2,265	6,927	2,053
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	99.7%	99.8%	99.7%	99.6%
% District Impacted	0.34%	0.21%	0.28%	0.41%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	0.31%	0.21%	0.25%	0.41%

Route EV – Evergreen/Aspen Park/Denver

Reinstate weekday service with three A.M. and P.M. rush hour trips. These trips will temporarily serve passengers boarding and alighting at Federal Center Station in lieu of the route 99L returning from suspension at this time.

Route EV Evergreen / Denver				
Reinstated Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	7,736	2,332	7,942	2,125
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	99.6%	99.8%	99.7%	99.6%
% District Impacted	0.40%	0.22%	0.32%	0.43%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	0.36%	0.22%	0.29%	0.43%

Route LD3 – Longmont/Denver

Restore weekday service on LD3, with 60-minute service frequency during midday between 8th/Coffman Park-n-Ride and US 36 Broomfield Park-n-Ride.

Route LD3 Longmont / Denver				
Modified Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	9,803	3,882	11,233	2,453
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
% District Not Impacted	99.5%	99.6%	99.5%	99.5%
% District Impacted	0.50%	0.36%	0.45%	0.49%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
DI & DB Thresholds Are 90% Non-Equity % District Impacted Population	DI Threshold	Min Pop Impacted	DB Threshold	L-I Pop Impacted
	0.45%	0.36%	0.41%	0.49%

Route P – Parker/Denver

Reinstate weekday service, with three trips in each direction.

Route P Parker / Denver				
Reinstated Service				
	Non-Minority Population	Minority Population	Higher Income Population	Low-Income Population
Route Service Area Impacted	12,786	3,595	13,721	2,660
District	1,949,880	1,069,337	2,475,594	498,433
District Total	3,019,217		2,974,027	
<i>% District Not Impacted</i>	99.3%	99.7%	99.4%	99.5%
<i>% District Impacted</i>	0.66%	0.34%	0.55%	0.53%
Thresholds	Disparate Impact (DI)		Disproportionate Burden (DB)	
<i>DI & DB Thresholds Are 90% Non-Equity % District Impacted Population</i>	<i>DI Threshold</i>	<i>Min Pop Impacted</i>	<i>DB Threshold</i>	<i>L-I Pop Impacted</i>
	0.59%	0.34%	0.50%	0.53%